PTN Electronics

SC91DM Scaler Switcher, with Digital Amplifier

User Manual

PTN ELECTRONICS

SC Series --- Presentation Scaler Switcher

Please read this manual carefully before using this product.

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Attention：

This is a manual for Presentation scaler switcher SC91DM.

This manual is only an instruction for operators, not for any maintenance usage. The functions described in this version are updated till Feb 2011. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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All product function is valid till 2011-2-1

⚠ Operation Notice

In order to ensure the credibility use of the product and the user's safety, please comply with the following items during installation and maintenance:

①

The system must be earthed properly. Please do not use two blades plugs and ensure the alternating power supply ranged from 100v to 240v and from 50Hz to 60Hz.

②

Do not put the machine in a place of too hot or too cold.

③

To avoid any damage by over heat, please keep the working environment good in ventilation to radiate the heat when running the machine.

④

The machine should be turned off when in rainy and humid days or nonuse for a long time.

⑤

The AC power supply line should be disconnected with the power socket during the following operation.

A. Take out or reinstall any component of the machine.
B. Disconnect or re-connect any connector of the machine.

⑥

Please do not attempt to maintain and uncover the machine for there is a high-voltage component inside and the risk of the electric shock.

⑦

Do not splash any chemical product or liquid on or near the equipment.

1. Function

SC91DM is the Full-HD scaling presentation switcher with digital amplifier, scaling 9 video inputs including 2 HDMI, 2 VGA, 2 component video, 2 composite video, 1 separate video up to 2 outputs at HDMI and VGA simultaneously with inbuilt amplifier, supporting HDTV, controllable via IR remote, front panel & RS232 control.
It is the high performance device for the video conference rooms, educational facilities, control rooms, monitoring centers, government institutions and demonstration hall, etc.

- All the inputs can be switched to VGA/HDMI signals with following resolution,
  4:3 display from 800X600@60Hz to 1600X1200@60Hz
  16:9 display from 853*480@60Hz to 1920*1080p [Full-HD]
  16:10 display from 1280X800@60Hz to 1920X1200@60Hz
- 1 audio amplifier output, 2x8Watt@4Ohm
- 2 HDMI inputs. Full-HD. It supports the PIP (picture in picture) function, the video input can be inserted to the HDMI input.
- 2 wide-band VGA inputs signals switching, up to 350MHz.
- 2 Component video inputs (Y Pb Pr), wide-band video displaying.
- 2 CVBS (including NTST, PAL and SECAM),
- 1 S-VIDEO (including NTST, PAL and SECAM)
- 1 MIC input, separated volume circuit enable the connection with the master audio signal

2. Features

- ·HDTV compatible. Full-HD display. Up to resolution at 1920*1200. Compatible with 1080P, 720P, WUXGA, WXGA, SXGA, UXGA, XGA and SVGA.
- ·HDCP compatible. (HDCP1.2 version). (High Definition Content Protection) license agreement allows copy-protected data on the HDMI input to pass only to the HDMI output
- ·It is working compatible with HDMI, computer graphics video, Component Video, S-Video, C-Video signals, going with audio. It scales up to the high definition video output, HDMI and VGA port(15HD) .
- ·Two simultaneous video outputs. (HDMI and VGA connectors)
- ·Powerful OSD function, with full function controlling, supporting 11 languages, including the English, French, Spanish, Portuguese, Arabic, German, Italian, Dutch, Russian, Chinese and Korean.
- ·OSD password setting function, and OSD duration time setting
- ·Picture in picture (PIP), picture besides picture (PBP). And the secondary window is supporting the transparence setting, as well as the windows size adjusting.

- .One audio amplifier output, 2x8Watt@4Ohm.
- ·Video freezing up function
- ·Video parameter setting(color, hue, contrast, brightness, sharpness and video size), supporting the video preset function (news, entertainment, music, cinema.)
- ·High-Class windows setting(Trint, Phase, Frequency, H/V position, color space)
- ·High-class volume setting (bass, treble, balance, sound mode), audio mode preset.
- ·Stand by setting, duration time setting. Stand by setting.
- ·The Video is compatible with NTSC 3.58, NTSC 4.42, PAL, and SECAM
- ·7 channels audio inputs, following the video or break away switching. Audio adjustable, and audio level preset functions.
- ·Blank screen setting. Black screen/Blue screen selectable.
- ·1 MIC input (no phantom power). MIC volume can be separately adjusted and preset
- ·Audio mixing function, the output is mixed by MIC volume and line volume.
- ·RS-232 serial control port. Public command, working with the third-party device
- ·Rack-mountable aluminium enclosure, 1 U height.
- ·Internal international power supply (100Volt~240Volt AC, 50/60Hz) for worldwide compatibility, all models are equipped with an internal, auto-switching power supply that meets or exceeds all appropriate safety certifications.
- ·Front panel LED indicator. It will show you the working status of product.
- ·IR remote control. Default IR remote to control the full function of the scaler.

3. Front Panel

- Power status indication light (LED)
- IR Sensor
- Signal Indication light (LED)
- Signal “Source selection”, to select the input Signal Source (HDMI, VGA, YPbPr, C-Video & S-Video).
  HDMI signal: Home cinema, PC, high-class video player.
  VGA Signal: Mainly for PC or NOTEBOOK.
  YPbPr: Camera, DVD or video card, etc.
  C-Video: CVBS, such as DVD, VCD, VCR, etc.
  S-Video: super DVD, VCD or video card, etc.
- Mute/Volume Knob: 1) Mute is available for both MIC and master volume; 2) You can control the volume by the knob, or RS232. It is the mixed and processed volume, which can be connected to the speaker directly.

- Resolution Display: It is working with the 4:3, 16:9, 16:10 display. Up to Full-HD. You can select the regular resolution from the front panel. And, you can select more resolution by RS232.
- OSD displaying. It can show you the real-time switching information by OSD technology. The user can see all his operation from the displayer.

4. Real Panel

- 2 audio RCA connector, 1 HDMI connector, 1 VGA connector & 1 amplifier captive screw connector outputs
- 2 HDMI connector inputs (2 separated audio, 3.5mm mini. jack)
- 2 VGA connector inputs.
- 2 YPbPr (3 pcs RCA)connector inputs
- 2 C-Video (1 pc RCA) connector inputs
- 1 S-Video (S-Video connector)connector inputs
- 1 MIC
- 1 RS232 (9HD) connector
- 1 GND for ground shield connection

5. Specification

VIDEO/DISPLAY Specification

Video Input		**Video Output**	
Input	2 HDMI 2 Computer graphics picture 2 Component video 2 Composite video 1 S-video	Output	1 HDMI 1 Computer graphics
Input Connector	HDMI female VGA (15 pin HD) female RCA female RCA female 4-pin mini DIN	Output Connector	HDMI female VGA (15 pin HD) female
Video Signal	HDMI 1.2 RGBHV, RGBs, RGsB, RsGsBs; Y-Pb-Pr, NTSC 3.58, NTSC 4.42,PAL, SECAM	Video Signal	HDMI 1.2 RGBHV, RGBs, RGsB, RsGsBs
Video General			
Resolution Range	1080P, 1920*1080 ; 720P, 1280*720; WUXGA,1920*1200; WXGA,1280*800 ; SXGA,1280*1024; UXGA, 1600*1200; XGA, 1024*768 ; SVGA, 800*600.	Bandwidth	HDMI: 4.95Gbps(1.65Gbps per color) Composite video:150MHz S-video:150MHz VGA: 375MHz
Maximum Pixel Clock	165MHz	Switching Type	Vertical interval
VGA Cross Talk	-50dB@5MHz	Vedio Impedance	75Ω
Gain	0dB	Inout/Output Level	0.5V~2.0Vp-p
HDCP	Compliant with High -bandwidth Digital Content Protection (HDCP) using DVI and HDMI 1.2 standards		
Audio Input		**Audio Output**	
Input	7 Stereo Audio for line audio 1 Mono Audio for MIC audio	Output	1 stereo audio for line audio 1 16W amplifier

Input Connector	6 RCA for for Composite video & Super audio 4 3.5mm for VGA audio 1 Mono Audio for MIC audio	Output Connector	2 RCA for line audio 1 Captive screw for amplifier
Audio Input Impedance	>10Ω	Audio Output Impedance	50Ω
Audio General			
Audio Connector	Mini Jacks; tip (L); ring (R); sleeve (GND)	Stereo Channel Separation	>80dB @1KHz
Frequency Response	20Hz~20K Hz	CMRR	>90dB @20Hz to 20K Hz
Control Parts			
Control/Remote	IR remote, buttons, RS-232, 9-pin female D connector	Pin Configurations	2 = TX, 3 = RX, 5 = GND
Options	TCP/IP control by PTNET		
General			
Temperature	-20 ~ +70℃	Humidity	10% ~ 90%
Power Supply	100VAC ~ 240VAC, 50/60Hz	Power Consumption	25W
Case Dimension	W483 x H44 x D235 mm (1U high, full rack wide)	Product Weight	2.4Kg

6. Description for Video/Audio Parts

Part 1: CVBS/S-Video

- ⌘ Support PAL/SECAM/NTSC video format;
- ⌘ multiplicity SCALER Mode (auto , normal , wide , fill all , Anamorphic , zoom etc) ;
- ⌘ 3D comb filter (CVBS);
- ⌘ Short key to switch video signal input ;

Part 2: YPbPr Signal (HDTV)

Input signal format	Display reference				
	Frame Rate		Frame Rate		Frame Rate
720×480 I	2:1	525	15.75	60	4:3
720×480 P	1:1	525	31.5	60	4:3
720×576 I	2:1	625	15.625	50	4:3
720×576 P	1:1	625	31.25	50	4:3

1280×720P	1:1	750	45	60	16:9
1280×720P	1:1	750	37.50	50	16:9
1920×1080 I	2:1	1125	28.125	50	16:9
1920×1080 I	2:1	1125	33.75	60	16:9
1920×1080 I	2:1	1250	31.25	50	16:9
1920×1080 p	1:1	1250	62.5	50	16:9
1920×1080 p	1:1	1250	67.5	60	16:9
PS: the band width can achieve 170MHz					

⌘ multiplicity SCALER Mode (auto, normal, wide, fill all, Anamorphic, zoom etc;

⌘ Adjustable V/H position, phase, frequency;

Part 3: **RGBHV Signal** (**VGA**)

Support VGA Input:

—— VGA-640×480

—— SVGA-800×600

—— XGA-1024×768

—— SXGA-1280×1024

——UXGA-1600×1200 (60Hz)

——Other Substandard signal

⌘ the display band width can achieve 170MHz;

⌘ Short key to optimize V/H position, phase and frequency ;

⌘ Multiplicity SCALER Mode (4:3,FILL ALL etc) ;

Part 3: **HDMI Signal (DVI Signal)**

Support all standard signal format in CEA-861B specification

Support HDMI Input:

720×480I 30HZ

720×480P 60 HZ

720×576I 25 HZ

720×576P 50 HZ

1280×720P 50 HZ

1280×720P 60 HZ

1920×1080I 25 HZ

1920×1080I 30 HZ

1920×1080P 50 HZ

1920×1080P 60 HZ

- ⌘ DVI input compatible;
- ⌘ Auto detect HDMI (DVI) Color Space;
- ⌘ Digital audio decoding;
- ⌘ Multiplicity SCALER Mode (4:3; FILL ALL etc);
- ⌘ Only one HDMI port can be used at the same time;

Part 4: **Audio Input/Output**

Integrated SGTV5810/5830, support 2 channels audio output;

- ⌘ Support NICAM and Germany FM;
- ⌘ Support BG/DK/I/L/L';
- ⌘ SRS audio enhance function (Optional);
- ⌘ Support earphone output (Side AV board);

Part 5: **PIP Signal Matrix**

Support PIP, which two signals can be mixed obeying the rules below:

	C-Video 1	C-Video 2	S-Video	YPbPr1	YPbPr2	VGA1	VGA2	HDMI1	HDMI2
C-Video 1	x	√	√	√	√	√	√	√	√
C-Video 2	√	x	√	√	√	√	√	√	√
S-Video	√	√	x	√	√	√	√	√	√
YPbPr1	√	√	√	x	x	x	x	√	√
YPbPr2	√	√	√	x	x	x	x	√	√
VGA1	√	√	√	x	x	x	x	√	√
VGA2	√	√	√	x	x	x	x	√	√
HDMI1	√	√	√	√	√	√	√	x	x
HDMI2	√	√	√	√	√	√	√	x	x

- "√" means signal on the row & another signal on the column can be mixed as PIP window;
- "×" means can not.
- Same source can't do.

7. OSD Operation (On-Screen-Display)

The SC91D provides a nice OSD operation menu, with various functions and language.
The operation introduction is:

7.1 Picture Setting

The first icon of OSD menu is to set the picture parameter. It includes the pictures mode, brightness, contrast, sharpness, image size and color temperature. And Other Setting is available depending on different input.

Picture mode: Six preset modes can be chose, include movies, sports, weak, multimedia, standard and personal. In personal mode, the brightness, contrast and sharpness can be adjusted by yourself.

Image size: Three modes can be chose, include fill all, fill aspect and 1:1(no scale).

Color temp: Four modes can be chose, include personal, normal, cool and warm. In personal mode, the red/green/blue color temperature can be adjusted by yourself.

Other setting: With VGA input, you can adjust the phase, frequency, H position, V position and auto adjustment. With HDMI input, you can set the HDMI color space.
With YPbPr input, you can adjust the tint, phase, H position, V position.

Please check the picture below:

7.2 Audio Setting

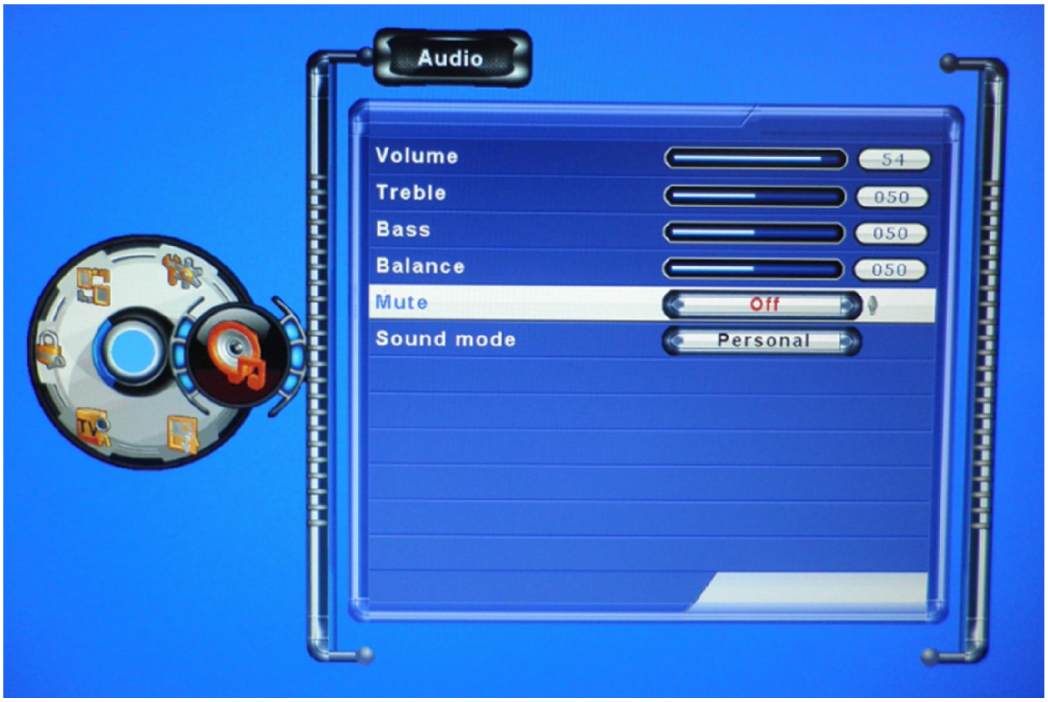
The Second icon of OSD menu is to set the audio/sound parameter. It includes the volume, treble, bass, balance setting, mute and sound mode.

Volume: adjust the line volume.

Mute: mute or unmute the line volume.

Sound mode: Four modes can be chose, include music, theatre, news and personal. In personal mode, the treble, bass and balance can be adjusted by yourself.

Please check the picture below:



7.3 Setup

The Third icon of OSD menu is the system setting. It includes the OSD language, sleep timer, freeze frame, transparency, OSD timeout, factory reset, source rename and horizontal/ vertical enable start setting.

Language: eleven language can be chose.

Sleep timer: set a time that the SC91D go to sleep. And in the sleep mode when you need it work again, you should power off/on the SC91D. (Delete in new version)

Freeze frame: freeze the image, no include the OSD menu.

Transparency: set the transparency of the OSD menu.

OSD timeout: set how long will the OSD disappear when there is no operation.

Factory rest: reset to the factory setting.

Source rename: rename the display of source name, six names can be chose.

H enable start: adjust the horizontal position of VGA output.

V enable start: adjust the vertical position of VGA output.

Please check the picture below:

7.4 Position

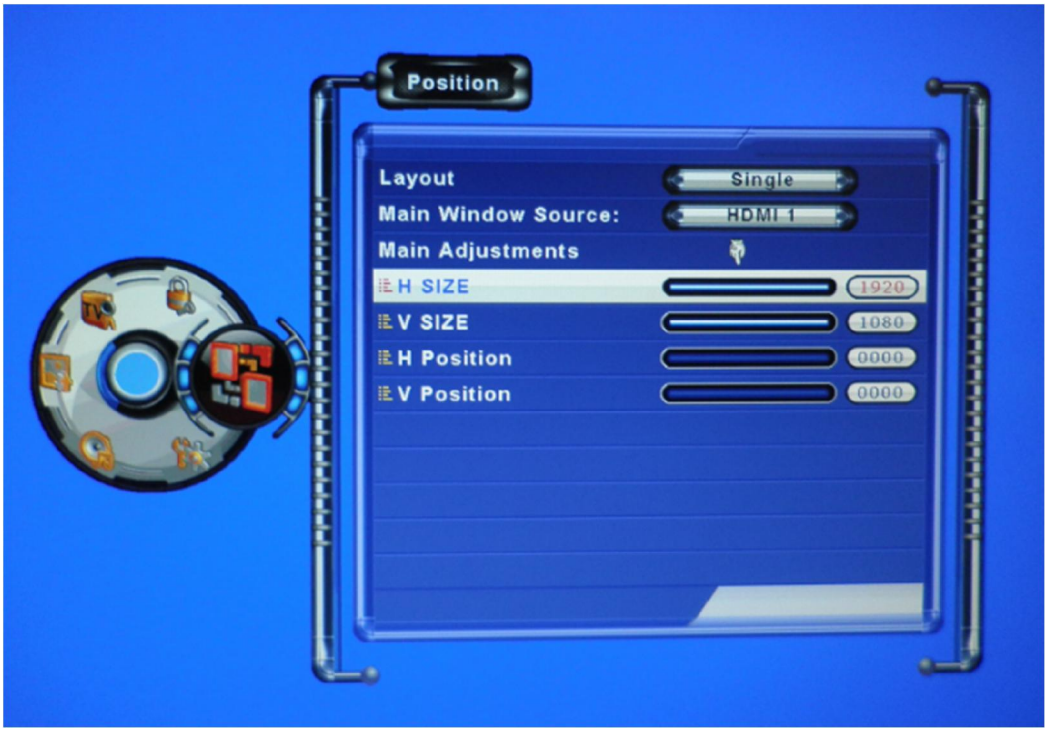
The fourth icon of OSD menu is the main window setting. It includes layout, main window source, main window adjustments.

Layout: show the output mode, single or PIP, cannot be set.

Main window source: show the source of main window, cannot be set.

Main window adjustments: adjust the H size and V size of the output signal, then you can adjust the position of the output image.

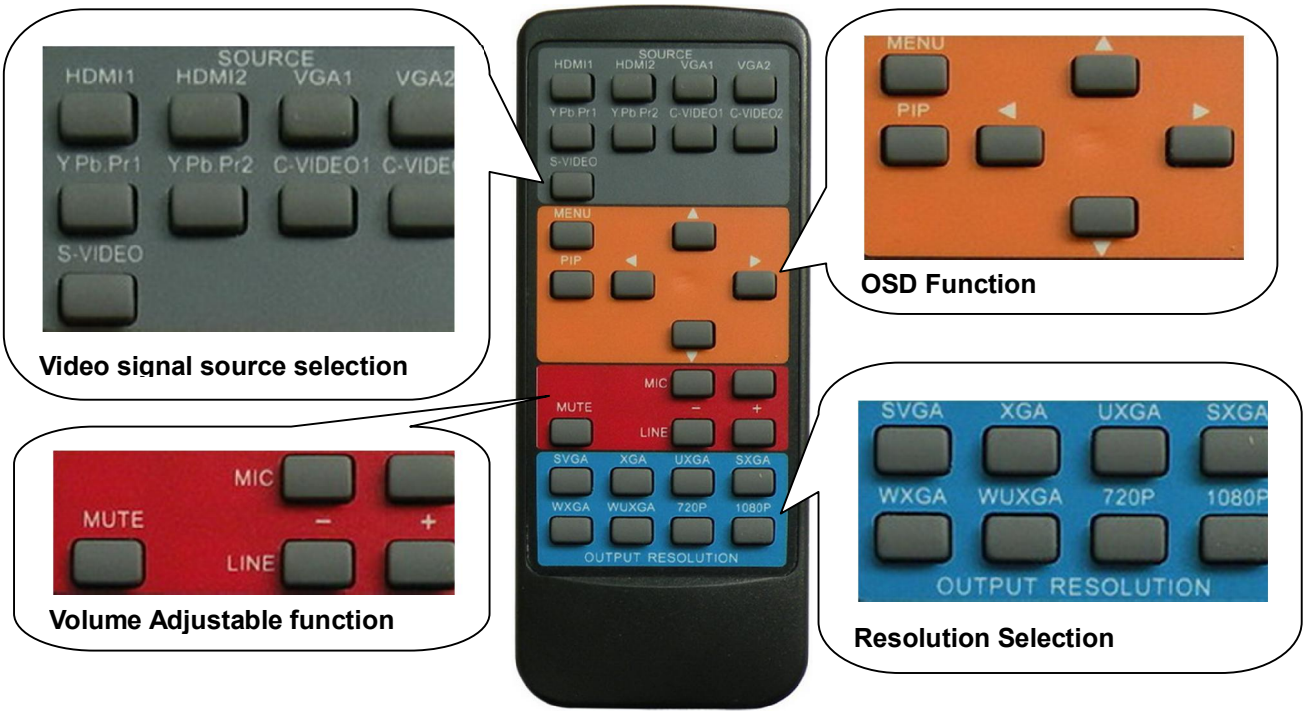
Please check the picture below:



NOTICE: The TV tuner and Function icon are unavailable in SC91D.

8. IR Remote Description

IR remote is the default accessory, going with the SC91DM. It is working with the CR battery. It can control various functions, such as switching, resolution changing, volume function and OSD function.



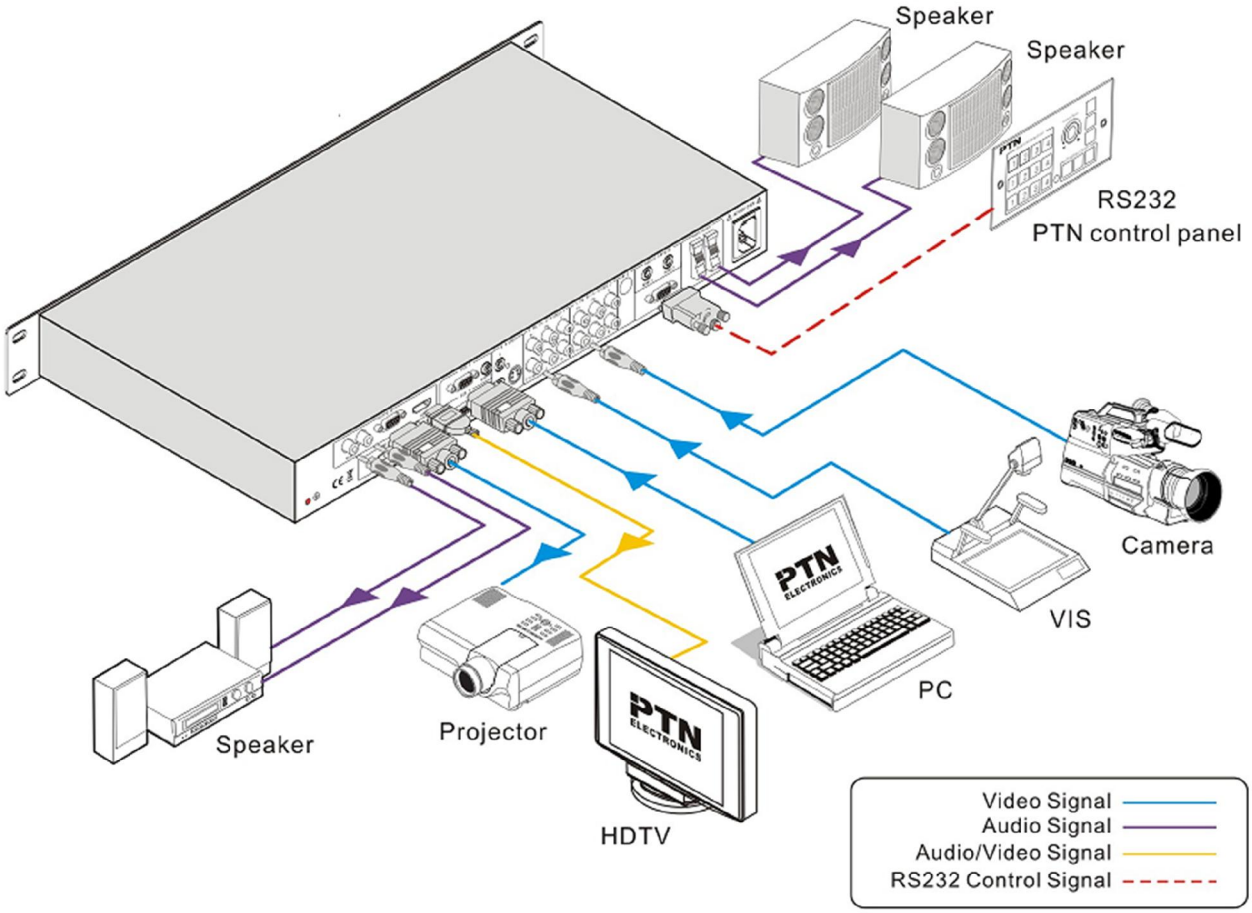
Battery of IR remote is the lithium battery, model name: CR2025

9. System Diagram

The SC91DM is 9 video inputs, including the 2xHDMI, 2x VGA, 2x YPbPr, 2x C-Video, 1x S-Video. All of them can be switched to the HDMI and VGA outputs simultaneously, except the HDCP protection signal(which can only be switched to the HDMI output).

And, the SC91DM has 7 audio inputs, including the 4x 3.5mm jack, 6x RCA. Every audio input can be switching following the video or break away switching by RS232 controlling.

And, there is a 2x8Watt@4Ohm amplifier output, which is the same as line out of 2xRCA output. The MIC input is not including the phantom power.



10. RS232 Control Command Introduction

Communication protocol:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

Command Type	Command	Command Description
Command function	XXYY&	Input selection, and output resolution selection. [XX] is for input source selection. [YY] is for output resolution selection. [&] is the stop command. See [Notice 1]
	01XX%	Line Vol setting, the [XX] ranging from 00~60 (algorism)
	02XX%	MIC Vol setting, the [XX]ranging from 00~60(algorism)
	03XX%	Brightness setting, the [XX]ranging from00~99(algorism)
	04XX%	Contrast setting, the [XX]ranging from00~99(algorism)
	05XX%	Color setting, the [XX]ranging from00~99(algorism)
	LOCK%	Lock the buttons of the front panel. Resend for unlock
	0700%	Get Video Source, Resolution, Line Audio level, Mic audio level and Master Mute
	0701%	HDMI 1 Input Selection
	0702%	HDMI 2 Input Selection
	0703%	VGA 1 Input Selection
	0704%	VGA 2 Input Selection
	0705%	Component 1 Input Selection
	0706%	Component 2 Input Selection
	0708%	Video 1 Input Selection
	0709%	Video 2 Input Selection
	0707%	S-Video Input Selection
	0711%	800X600 SVGA
	0712%	1024X768 XGA
	0713%	1280X1024 SXGA
	0714%	1280X800 WXGA
	0715%	1280X720 720P
	0716%	1920X1200 UXGA
	0717%	1920X1080 1080P
	0718%	1920X1200 WUXGA

Command Type	Command	Command Description
Video Processing	0720%	Get the current status of the brightness, contrast, color hue, saturation, phase and sharpness
	0721%	Screen Saver Color Black
	0722%	Screen Saver Color Blue
	0723%	Disable on screen display status of video source name which is shown in the right bottom of the screen.
	0724%	Enable on screen display status of video source name which is shown in the right bottom of the screen.
	0725%	Disable on screen display status of master and Mic volume level and mute
	0726%	Enable on screen display status of master and Mic volume level and mute
	0728%	Menu On / Off
	0729%	Menu Enter (Remove from 0609% since this command is used for Left Menu)
	0730%	PIP / PBP Off
	0731%	PIP On
	0732%	PBP On
	0733%	PIP/PBP Window HDMI 1 Input Selection. (check the table “NOTICE 1”)
	0734%	PIP/PBP Window HDMI 2 Input Selection(check the table “NOTICE 1”)
	0735%	PIP/PBP Window VGA 1 Input Selection(check the table “NOTICE 1”)
	0736%	PIP/PBP Window VGA 2 Input Selection(check the table “NOTICE 1”)
	0737%	PIP/PBP Window Video 1 Input Selection(check the table “NOTICE 1”)
	0738%	PIP/PBP Window Video 2 Input Selection(check the table “NOTICE 1”)
	0739%	PIP/PBP Window Component 1 Input Selection(check the table “NOTICE 1”)
	0740%	PIP/PBP Window Component 2 Input Selection(check the table “NOTICE 1”)
	0741%	PIP/PBP Window S-Video Input Selection(check the table “NOTICE 1”)
	0608%	change the video size, 16:9, 16:10, 4:3 selection
	0601%	Output frame auto-adjustment. Horizontal/Vertical auto-adjust
	0624%	PIP,PBP selection
	0625%	P.P picture mode
	0627%	SWAP switching
	0745%	Mute Video (switch to Black)
	0746%	Un-Mute Video, return to the last video source.
	0747%	Lock the audio channel. This audio channel won’t follow the video switching
	0748%	UNlock the audio channel. all audio channels will follow the video switching
	LOCK%	Lock the front panel/Unlock the front panel buttons.
	08XX%	Phase setting, the [XX] range 00~99 (only the VGA inputs are available)
	09XX%	Sharpness setting, the [XX] range (00~15)

Command Type	Command	Command Description
Menu Operation	0609%	ENTER
	0609%	◄ move left of the menu
	0610%	► move right of the menu
	0611%	▲ Move up of the menu
	0612%	▼ Move Down of the menu
Audio Process	0600%	MUTE for Line Vol and MIC Vol
	0602%	MIC Vol +
	0603%	MIC Vol -
	0630%	line Vol +
	0631%	line Vol -
	0626%	SM sound mode
	0628%	NICAM sound mode

Note 1 :

1: the code[XX] is for the input channel selection.

Code :	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 7	0 8
Channel :	HDMI1	HDMI2	VGA1	VGA2	YPb.Pr1	YPb.Pr2	S video	Cvideo1	Cvideo2

1: the code[YY] is for the resolution setting

Code :	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 7
Resolution :	800X600	1024X768	1280X1024	1280X800	1280X720P	1600X1200	1920X1080	1920X1200

Detail Examples:

1: Resolution/Input channel switching. Switching to the VGA2, with 1920*1200 resolution , the command should be:
"0307&"

2: Set the line vol to be the 35th degree (the line vol is 60 degrees in total). The command should be:
"0135%"

3: Set the MIV vol to be 57th degree (the MIC vol is 63 degrees in total). The command should be:
"0263%"

4: Set the Brightness to be 89th degree (the Brightness is 100 degrees in total). The command should be:
"0389%"

5: Set the Contrast to be 86th degree (the Contrast is 100 degrees in total). The command should be:
"0486%"

6: Set the Color to be 92nd degree (the Color is 100 degrees in total). The command should be:
"0592%"

11. Troubleshooting & Maintenance

1. When images of terminal unit output with ghost, such as the projector output with ghost, please check the projector's setting or try another high quality connection cord.
2. When there is a color losing or no video signal output, please check the input and output end connection of cable.
3. When the remote controller doesn't works: 1) The battery has no power, please change a new one. 2) The controller was broken, please repair it.
4. When user cannot control the switcher by computer through its COM port, please check the COM port number in the software and make sure the COM port is in good condition.
5. When switching, there are codes back but no output image, please check with if there is any signal at the input end. If there is no signal input, maybe the input connection cord broken or the connectors loosen.
7. If the POWER indicator doesn't work or no respond to any operation, please make sure the power cord connection is well.
8. If the output image is interfered, please make sure the system is grounded well.
9. If the static becomes stronger when connecting the BNC connectors, it maybe due to the incorrect grounding, please correct it otherwise it would damage the switcher.
10. If the switcher cannot be controlled by the buttons on the front panel, RS232 port or remote controller, the switchers may have broken. Please send it to the dealer for repairing.

Remarks: For any more questions or problems, please try to get help from your local distributor, or email PTN at support@PTN-electronics.com.